

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT K. HOLLENBECK

Appeal No. 98-0984
Application 08/428,561¹

ON BRIEF

Before CALVERT, ABRAMS and BAHR, Administrative Patent Judges.
CALVERT, Administrative Patent Judge.

¹ Application for patent filed April 25, 1995.

Appeal No. 98-0984
Application 08/428,561

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 to 4, 9, 13 to 17 and 20, all the claims remaining in the application.

The appealed claims are drawn to a refrigeration system, a control for use with a refrigeration system, and an apparatus for use as part of a refrigeration system. They are reproduced in Appendix A of appellant's brief.

The prior art applied in the final rejection is:

Ruff et al. (Ruff)	3,449,922	June 17, 1969
Shaw	4,058,988	Nov. 22, 1977
Voss et al. (Voss)	5,350,039	Sept. 27, 1994

Admitted Prior Art

The claims on appeal stand finally rejected under 35 U.S.C. § 103 as unpatentable over the following combinations of prior art:

Appeal No. 98-0984
Application 08/428,561

(1) Claims 1 to 4, 13, 15 to 17 and 20, Voss in view of Ruff;²

(2) Claim 9, Voss in view of the Admitted Prior art;

(3) Claim 14, Voss in view of Shaw.

Rejection (1)

The basis of this rejection is stated by the examiner on pages 2 to 3 of the final rejection (Paper No. 9) as follows:

Voss discloses the invention substantially as claimed. Voss discloses a refrigeration system having a hermetically sealed variable speed compressor with motor 72, power switching circuit 46, electronic commutating circuit 44 and Hall effect position sensing circuit 68 within the sealed compressor housing wherein the refrigerant circulating within the system is used to cool the motor, electronic and power circuits. . . . Voss states that the position sensing circuit can be located at any loca-

² In the final rejection the examiner rejected claims 15 and 16 as unpatentable over Voss in view of the Admitted Prior Art, even though they were dependent on claim 1. We have included them under rejection (1) since they were treated in both the appellant's brief and the examiner's answer as having been rejected as unpatentable over Voss in view of Ruff.

tion within the housing near a rotating member. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of Voss such that the position sensing circuit was in contact with the refrigerant in order to cool the circuits if they required cooling in view of the teachings of Voss to cool other electrical and electronic components. . . . Ruff et al teaches providing a converter 2 having rectifier 3 and capacitive components 8 external of the compressor housing for converting AC to DC for motor power supply. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of Voss such that it included a converter having rectifier and capacitive components external of the compressor housing for converting AC to DC for motor power supply in view of the teachings of Ruff.

Appellant argues to the effect that it would not have been obvious to combine Voss and Ruff as proposed by the examiner, because (reply brief, page 3; emphasis in original):

Generally, Voss teaches the placing of ALL electronic components WITHIN the compressor housing. On the other hand, Ruff's general teaching suggests that ALL electronic components should be EXTERNAL to the compressor housing. The teachings of Voss and Ruff are incomplete and inconsistent with each other. Therefore, the general teachings of Voss and Ruff in combination with the specific lack of a capacitor in

Appeal No. 98-0984
Application 08/428,561

the Voss patent cannot be a basis for rejecting the claims as obvious because the reason for placing only the capacitor outside the hermetically sealed housing is not apparent from the references.

We note initially that, in powering a D.C. motor such as Voss' motor 34 from the usual A.C. power supply, the A.C. power must be rectified, and, as disclosed by Ruff, the rectifier 3 may have a smoothing filter capacitor 8 across its output. As for the placement of the rectifier and capacitor, we do not necessarily agree with appellant that one of ordinary skill following Voss' disclosure would necessarily locate them within the housing 48, because although Voss does state at col. 3, line 49, that the motor is "powered and controlled" by electronics 44, 46, the general teaching of this reference is

that the "control electronics" should be located in the housing in order to cool them (col. 1, lines 60 to 64; col. 2, lines 10 to 13). In our view, the rectifier and capacitor constitute part of the power supply for the motor, rather than

"control electronics," and therefore would not be included in the electronics 44, 46 of Voss, which are defined as "six MOSFET or IGBT-type semiconductors 46" (col. 4, lines 37 and 38) and "a motor phase sequencing circuit board 44" (col. 4, line 61).

However, even assuming that Voss would suggest to one of ordinary skill that the rectifier and capacitor be placed inside the housing 48, we do not consider that the apparatus of claim 1, which calls for the capacitive component to be outside the housing, would have been unobvious over the combination of Voss and Ruff. As indicated above, Ruff discloses that the rectifier and capacitor, along with the SCRs 9 to 14, sequencer 18 and control center 19, may be placed outside the housing. Given this disclosure, it would have been obvious to one of ordinary skill that each of these various components might be placed either inside or outside the housing. The decision as to whether to locate a particular component inside or outside the housing would be an obvious matter of design choice in the sense that the decision would be essentially an economic one, weighing

the reduced cooling cost of placing the component inside the housing against such factors as the space available in the housing, redesign of the housing, accessibility of the component, and the like.

Appellant argues at page 5 of the brief that locating the capacitor component outside the housing is "a key feature of the invention" because, since the capacitive components tend to have a higher failure rate than the other components, keeping the capacitive components exterior to the hermetically sealed housing while keeping the other control components inside the housing allows for quick and inexpensive replacement of the components and avoids incompatibility with refrigerants. This advantage of the "key feature" is not disclosed in the specification, although there is no requirement that it must be in order for appellant to argue it as an advantage of his invention. In re Chu, 66 F.3d 292, 298, 36 USPQ2d 1089, 1094 (Fed. Cir. 1995). Nevertheless, appellant's present assertion that the location of the capacitor outside the housing is a "key feature" is somewhat undermined by his disclosure that the rectifier and capacitor

(which is itself optional) may be located either inside or outside the housing (specification, page 16, line 20, to page 18, line 11).

Considering the totality of the record, we conclude that placing a rectifier and capacitor either inside or outside of the housing 48 of Voss would have been obvious to one of ordinary skill. Placement of the rectifier and capacitor outside the housing was known in the prior art (Ruff), and although Ruff does not disclose the advantage now asserted by appellant, namely, that such placement would allow easier access to the rectifier and condenser, this advantage would be no more than the expected result of such placement, and, along with other factors as discussed above, would have to be weighed against the advantage (disclosed by Voss) which would result from placing the components inside the housing. In this regard, we note that an expected beneficial result is evidence of obviousness of a claimed invention, just as an

Appeal No. 98-0984
Application 08/428,561

unexpected beneficial result is evidence of unobviousness. Ex parte Novak, 16 USPQ2d 2041, 2043 (Bd. Pat. & Int. 1989), aff'd. mem., 899 F.2d 1228, 16 USPQ2d 2043 (Fed. Cir. 1990).

Contrary to appellant's arguments, the suggestion of modifying Voss in the manner proposed by the examiner would not be the result of improper hindsight, but would come from the prior art (Ruff), "as filtered through the knowledge of one skilled in the art." Motorola Inc. v. Interdigital Technology Corp., 121 F.3d 1461, 1472, 43 USPQ2d

1481, 1489 (Fed. Cir. 1997). If Voss is construed as teaching that the rectifier and capacitor should be located in the housing, then in effect what appellant has done, insofar as claim 1 is concerned, is to return them to their pre-Voss position, outside the housing.

Accordingly, the rejection of claim 1 will be sustained, as will the rejection of claims 2 to 4, 13, 15 to 17 and 20, which appellant has grouped with claim 1 (brief, page 4).

Rejection (2)

Appeal No. 98-0984
Application 08/428,561

The examiner's position as to this rejection is
(final rejection, page 4):

It is taken to be admitted prior art that rectifier and capacitive components (either electrolytic or nonelectrolytic) for converting AC to DC for motor power supply and the use for temperature responsive motor protection circuits are old in the art in view of applicant's failure to argue that such elements are not conventional in response to the First Office Action. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system of Voss such that it included same. It is considered to have been an obvious matter of engineering design choice to use the most appropriate electrical components for the environment in which they are to be used (i.e. nonelectrolytic capacitive components if the AC to DC converter circuit is placed inside the compressor housing).

Appellant argues on page 7 of his brief that:

Applicant admits only that electrolytic and non-electrolytic capacitive components are known but does NOT admit that such components have been selectively applied as described and claimed by the invention. The Examiner argues that such components are a design choice. However, the cited prior art fails to recognize that such

Appeal No. 98-0984
Application 08/428,561

components may not be compatible with the refrigerants so that it would not be a design choice to use only non-electrolytic capacitive components as recited by claim 9.

It is well settled that a rejection based on § 103 must rest on a factual basis, which the Patent and Trademark Office has the initial duty of supplying. In re GPAC, Inc., 57 F.3d 1573, 1582, 35 USPQ2d 1116, 1123 (Fed. Cir. 1995). Here, appellant's admission that electrolytic and non-electrolytic capacitors are known is not a sufficient basis for modifying the Voss system as proposed by the examiner, *supra*, because there is no evidence in the cited prior art that the compatibility (or lack thereof) of non-electrolytic and electrolytic capacitors with refrigerant was known. Absent such evidence, there is no basis for concluding that use of a non-electrolytic capacitor in the Voss housing would have been suggested to one of ordinary skill in the art. Cf. In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

The rejection of claim 9 therefore will not be sustained.

Rejection (3)

The examiner asserts that it would have been obvious, in view of Shaw, "to have modified the system of Voss such that it included a bi-directional motor" (final rejection, pages 4 to 5). We disagree. One of ordinary skill would not substitute a bidirectional motor for the motor 34 of Voss, because if Voss' motor were run in the reverse direction, compressor impellers 36, 38 would be inoperative.

Assuming that the examiner intended to state that it would have been obvious to use a bidirectional motor and compressor, as disclosed by Shaw, as the motor and compressor in the Voss system, we still do not consider the rejection to be proper. In the first place, we find no suggestion in Voss that the system disclosed therein could or should be operated in a reverse direction. Secondly, as appellant points out in his brief, claim 14 requires that the commutation circuit "is adapted to start and commutate the bi-directional motor in either a clockwise or a counterclockwise direction," and there is no disclosure or suggestion of this feature in the prior art applied.

Appeal No. 98-0984
Application 08/428,561

The rejection of claim 14 will not be sustained.

Conclusion

The examiner's decision to reject claims 1 to 4, 9, 13 to 17 and 20 is affirmed as to claims 1 to 4, 13, 15 to 17 and 20, and reversed as to claims 9 and 14.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

	IAN A. CALVERT)	
	Administrative Patent Judge)	
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	NEAL E. ABRAMS)	APPEALS AND
	Administrative Patent Judge)	
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Appeal No. 98-0984
Application 08/428,561

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Appeal No. 98-0984
Application 08/428,561

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